XII.—*A Revision of the "Cribrimorph" Cretaceous Polyzoa.*

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Introductory.

A very large number of the Cretaceous Polyzoa, usually placed in *Cribrilina* and similar genera, fall into the groups here described. Though it is possible that some of the subdivisions of these families may eventually prove to be unrelated, yet within these subdivisions the general evolutionary history is so plain, and marches so agreeably with the horizontal distribution of the forms, that there can be no doubt that the grouping is mainly natural.

Before dealing with the families in detail, it is well to review their common structure and the evolutionary aims common to all. Like all fossil Polyzoa, each form here described is a colony (*asty* *) composed of individuals (*œcia* *) incrusting other objects in free unilaminar or bilaminar sheets, in cylindrical tree-like forms, or sometimes in multilaminar masses. The œcia are *Cribrimorphs* † and *Steginomorphs* †, and are derived from *Membranimorphs* † or Cheilostome Polyzoa with a box-like œcium of which the uppermost side (*front wall*) has on it an oval rim (the *termen* ‡) which may, or may not, be beset with spines. The termen includes the *aperture*. Outside the termen the skeleton is calcareous, within it is chitinous. The Membranimorphs which directly gave rise to Cribrimorphs had a spiny termen, and of the terminal spines one pair proximal to the *orifice* fuses across the middle line and forms the *apertural bar* †. The terminal spines distal to the apertural bar (the *apertural spines* †) are typically six in number, but may be reduced to four and occasionally exceed six. It has not been possible to determine whether the pair of terminal spines which form the apertural bar are in every case homologous, but it is nearly certain that this is so within a given family or subfamily. The evolutionary history of the apertural spines is varied. The terminal spines proximal to the apertural bar are called *costæ* and, leaning over the intra-terminal space, they fuse in the middle line to form a calcareous, more or less perforate, intraterminal front wall. Such forms are Cribrimorphs.

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* The colony is generally spoken of as the *zoarium* and the individuals as *zoœcia*. For clear thinking, it is more convenient to have precise terms, as here used, for the skeletal parts as opposed to the zoarium and zoœcium, which strictly apply to the body-wall as well as its secretions.

† For these terms, see Lang, 1916, Geol. Mag. dec. vi. vol. iii. p. 76.

‡ For this term, see Lang, 1914, Geol. Mag. dec. vi. vol. i. p. 6.

The evolutionary aim in the development of all families appears to be the disposal to the best advantage or least detriment to the organism of superfluous Calcium Carbonate*. Doubtless, the ancestral Membranimorphs secreted the terminal spines under this stimulus. Continued pressure led to the exaggeration of the spines, and these, by bending over and fusing with their opposing fellows, formed a median line of fusion which gave scope for a considerable deposition of Calcium Carbonate.

Henceforward the disposal of Calcium Carbonate takes place in three main directions, which may be simultaneously pursued during the evolution of any one lineage. The intraterminal front wall tends to become more solidified by means of lateral fusions between the costæ, and secondary Calcium Carbonate may be piled up on the median line of fusion. The distal apertural spines may thicken and fuse with each other or with secondary tissue outside them to form the *distal shield* of secondary aperture, while thickenings or processes of the apertural bar, often helped by fusions with avicularia or with the proximal pair of apertural spines, form the *proximal shield* of a secondary aperture. And, thirdly, interœcial tissue may envelop the front wall peripherally or group itself around interœcial avicularia and, growing up, leave the intraterminal front wall sunk at a lower level. The secondary aperture may continue to grow in a tubular form, or may spread laterally and, by meeting and fusing with the outgrowths of neighbouring secondary apertures and interœcial tissue, may form a complete secondary front wall (*lamina peristomica* of Jullien)† ; such forms are *Steginomorphs*, and occur independently in several genera.

This general evolutionary history is corroborated in individual cases by the facts of development. Ontogeny is often used to elucidate the course of phylogeny, and the ontogenetic stages of individual œcia can sometimes be seen at the growing edge of the colony. But commoner and far more useful are the growth-stages of the colony itself. Astogeny ‡, like ontogeny, is frequently a useful guide to the phylogeny of the form considered, and in fossil Polyzoa

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[*] See Lang, 1916, Geol. Mag. dec. vi. vol. iii. pp. 74–77.

[†] Jullien, 1886, Bull. Soc. Zool. France, vol. xi. p. 609.

[‡] Cumings, 1904, American Journ. Sci. vol. xvii. p. 50.

has this advantage, that each successive stage is left behind and not, as a rule, covered over or obscured by further growth.

A. **Pelmatoporidæ**, fam. nov.

Diagnosis. Multiserial Cheilostome Polyzoa of moderate or large size ($\frac{1}{2}$ mm. to $1\frac{3}{4}$ mm.), whose intraterminal front wall is typically built of hollow terminal spines bent over archwise, fused in the middle line, then bent vertically and continued as free spines, the broken ends of which form two rows of *pelmata* (if small, *pelmatidia*)—hobnail-like markings on the intraterminal front wall; lateral costal fusions and secondary pelmata or pelmatidia may be developed; apertural spines typically 4, but occasionally 5, 6, or 7; a secondary aperture generally attained, and by a variety of methods in the different lineages; avicularia primarily small and abundant (seldom absent), but may become, secondarily, of a considerable size.

Tabular Diagnoses of Subfamilies of Pelmatoporidæ.

A. Costæ thin, with a single series of pelmatidia and no lateral costal fusions.	
I. Costæ separated by wide gaps	a. *Francoporinæ.*
II. Costæ touching or very close together.	
a. Avicularia occasional, rather large, and pointing obliquely proximally	b. *Opisthornithoporinæ.*
b. Avicularia generally abundant and not generally proximally directed.	
1. Each half of the apertural bar bifid..	c. *Kelestominæ.*
2. Apertural bar not bifid.	
α. Avicularia, if emerging from secondary tissue, are either several, placed around the aperture, or a pair laterally or proximally placed with regard to the aperture	d. *Tricephaloporinæ.*
β. A pair of avicularia, distally placed with regard to the aperture, emerge from secondary tissue which envelops the whole œcium otherwise, except the aperture and a small part of the intraterminal front wall; proximal apertural spines fuse with a median process of the apertural bar and with the distal apertural spines, forming a pair of hoop-like arches on each side of the aperture	e. *Pnictoporinæ.*
B. Costæ thin, with secondary pelmatidia and lateral costal fusions	f. *Castanoporinæ.*

C. Costæ stout, with a lateral row of pelmata and a median row of pelmatidia	g. *Diacanthoporinæ.*
D. Costæ stout, with one or more series of pelmata	h. *Pelmatoporinæ.*

a. *Francoporinæ*, subfam. nov.

Tabular Diagnoses of Genera and Species.

A. Pelmatidia sometimes visible; intraterminal front wall arched and not sunk in secondary tissue	I. *Francopora.*
B. Pelmatidia quite obliterated by secondary tissue in the median area of fusion; œcia tend to be immersed in secondary interœcial tissue..................................	II. *Baptopora.*
a. Smaller, about $\frac{2}{3}$ mm.; secondary aperture proximally formed by a process of the apertural bar which probably fuses with the proximal pair of apertural spines to form hoop-like structures	1. *B. immersa.*
b. Larger, more than $\frac{2}{3}$ mm.; secondary aperture proximally complete, probably formed as in (*a*), but with the "hoops" infilled with secondary tissue	2. *B. insignis.*

I. Francopora, gen. nov.

Species. *Francopora canui*; Senonian [Coniacian]; Fécamp, N.E. of Le Havre, France.

Type-specimen. In the collection of F. Canu [a photograph of type-specimen in the British Museum].

II. Baptopora, gen. nov.

Genotype. *B. immersa.*

1. *B. immersa*, sp. n.

Type-specimen. British Museum, D. 28419; Coniacian; Tours, France.

2. *B.* [*Escharipora*] *insignis* (d'Orbigny), Pal. Franç. 1851, pl. 687. figs. 1–3, 1852, p. 231; Senonian [Santonian]; France.

b. *Opisthornithoporinæ.*

Opisthornithopora, gen. nov.

Species. *O.* [*Reptescharella*] *flabellata* (d'Orbigny), Pal. Franç. 1852, pl. 716. figs. 9–12, 1853, p. 469; Senonian; France. Interpreted according to M. Canu's identification of a specimen in his collection.

c. *Kelestominæ*, subfam. nov.

Tabular Diagnoses of Genera and Species.

A. Costæ fairly widely separate; proximal pair of apertural spines not greatly enlarged	I. *Kelestoma.*
1. Asty incrusting	1. *K. elongatum.*
2. Asty erect, cylindrical	2. *K. scalaris.*
B. Costæ nearly touching; proximal pair of apertural spines enormously enlarged	II. *Morphasmopora.*
1. Avicularia, although involved in the proximal shield, are not raised on to it	1. *M. jukes-brownei.*
2. Avicularia raised high on the proximal shield	2. *M. brydonei.*

It is possible that *Membraniporella aurita*, Hennig, 1892, Stud. Bry. Sver. Krit.; Act. Univ. Lundensis, Lunds Univ. Års-skrift, vol. xxviii. p. 38, pl. ii. figs. 34–35; *mucronatus*-zone; Sweden; is a *Morphasmopora.*

I. Kelestoma, Marsson.

Genotype. *K. elongatum.*

1. *K. elongatum,* Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 99, pl. x. 13; *mucronatus*-zone; Rügen.

2. *K. scalaris,* sp. n.

Type-specimen. British Museum, D. 18006; *mucronatus*-zone; Rügen.

II. Morphasmopora, gen. nov.

Genotype. *M. jukes-brownei* (Brydone).

1. *M.* [*Cribrilina*] *jukes-brownei* (Brydone), 1906, Geol. Mag. dec. v. vol. iii. p. 297, text-fig. 9 on p. 298; *mucronatus*-zone; Trimingham, Norfolk.

2. *M. brydonei,* sp. n.

Type-specimen. British Museum, D. 15122; *mucronatus*-zone; Rügen.

d. *Tricephaloporinæ*, subfam. nov.

Tabular Diagnoses of Genera.

A. Secondary aperture, if present, built up in connection with two avicularia at the proximo-lateral corners of, or laterally	

with regard to, the aperture. [In *Haplocephalopora* these avicularia are not conspicuous on the greatly prolonged apertural ring.]

1. No secondary front wall is formed, or, if so, it is formed by the swamping of the intraterminal front wall by secondary tissue.
   - *a.* Paired avicularia, if on the apertural ring, stand out laterally on each side of the aperture .... I. *Tricephalopora.*
   - *b.* Paired avicularia tend to disappear in the greatly prolonged apertural ring . II. *Haplocephalopora.*
2. A secondary front wall tends to be formed by the secondary tissue around the aperture spreading proximally and laterally .... III. *Phractopora.*

B. Secondary aperture always present and built up in connection with three, four, or more avicularia around the aperture.
  1. Œcia of small size, about $\frac{2}{3}$ mm. long; less secondary tissue .... IV. *Polycephalopora.*
  2. Œcia large, about 1 mm. long; more secondary tissue .... V. *Antropora.*

I. Tricephalopora, gen. nov.

Genotype. *T. triceps* (Marsson).

Tabular Diagnoses of the Species.

A. Paired avicularia not carried up on to the apertural ring so as finally to fuse over the apertural bar; in some cases they are directed proximally.
  I. Apertural ring incomplete laterally.
    a. Smaller, $\frac{1}{3}$–$\frac{1}{2}$ mm. long; more secondary tissue............................ 1. *T. prænuncia.*
    b. Larger, $\frac{1}{2}$–$\frac{2}{3}$ mm. long; less secondary tissue.
      1. Avicularia somewhat irregular, some proximally directed and some proximally placed with regard to the aperture .... 2. *T. ansata.*
      2. Avicularia regular and laterally placed with regard to the aperture .... 3. *T. vermicularis.*
  II. Apertural ring complete.
    a. Avicularia blunt and round.
      1. Avicularia regular and all distally directed.
        α. Median area of costal fusion smaller . 4. *T. capitata.*
        β. Median area of costal fusion larger.
          a. Œcia hardly longer than broad .. 5. *T. brevis.*
          b. Œcia nearly twice as long as broad .... 6. *T. galeata.*
      2. Avicularia rather irregular and some proximally directed .... 7. *T. somptingensis.*

b. Avicularia pointed and all proximally directed.
1. Avicularia larger .... 8. *T. saltdeanensis.*
2. Avicularia smaller .... 9. *T. pustulosa.*

B. Paired avicularia carried up on to apertural ring and, finally, fuse over the apertural bar; always directed distally.
I. Secondary tissue, with regard to the intraterminal front wall, is developed mainly over the median area of fusion.
a. Little or no interœcial secondary tissue .. 10. *T. languessensis.*
b. Abundant interœcial secondary tissue.
1. Costæ coarser.
α. Larger, about $\frac{3}{4}$ mm. long .... 11. *T. trifaux.*
β. Smaller, less than $\frac{3}{4}$ mm. long.
a. Costæ about 12 .... 12. *T. crepidula.*
b. Costæ about 16 .... 13. *T. castrum.*
2. Costæ finer.
α. Avicularia smaller .... 14. *T. triceps.*
β. Avicularia larger .... 15. *T. sherborni.*
II. Secondary tissue, with regard to the intraterminal front wall, is developed mainly over its peripheral portions.
a. A fair amount of primary front wall still showing .... 16. *T. pinguis.*
b. Very little primary front wall still visible.
1. Secondary aperture bent up at a high angle so as to be nearly vertical .... 17. *T. cerberus.*
2. Secondary aperture bent up at a smaller angle .... 18. *T. prolifera.*

1. *T. prænuncia*, sp. n.

Type-specimen. In M. Canu's collection (a photograph of type-specimen in British Museum); Coniacian; Fécamp, N.E. of Le Havre, France.

2. *T. ansata*, sp. n.

Type-specimen. British Museum, D. 28468; Coniacian; Fécamp, N.E. of Le Havre, France.

3. *T.* [*Cellepora*] *vermicularis* (Geinitz), 1846, Grund. d. Verstein. p. 613, pl. xxiii. *b*, p. 35; *mucronatus*-zone; Rügen.

4. *T.* [*Membraniporella*] *capitata* (Canu), 1911, Ann. Mus. Nac. Buenos Aires, vol. xxi. (series 3, vol. xiv.), p. 251, pl. vi. figs. 1–3; Rocanéan; Rio Negro.

5. *T.* [*Semiescharipora*] *brevis* (d'Orbigny), Pal. Franç. 1852, pl. 718. figs. 21–24, 1853, p. 485; Senonian; Sainte Colombe, France.

6. *T.* [*Cellepora*] *galeata* (Geinitz), 1846, Grund. d. Verstein. p. 613, pl. xxiii. *b*, p. 34 ; *mucronatus*-zone ; Rügen.

7. *T. somptingensis*, sp. n.

Type-specimen. British Museum, D. 28113 ; *quadratus*-zone ; Sompting, N.E. of Worthing, Sussex.

8. *T. saltdeanensis*, sp. n.

Type-specimen. British Museum, D. 28915 ; *quadratus*-zone, *depressus*-subzone ; E. of Brighton, Sussex.

9. *T.* [*Membraniporella*] *pustulosa* (Brydone), 1910, Geol. Mag. dec. v. vol. vii. p. 483, pl. xxxvi. fig. 9 ; *coranguinum*-zone (the figured specimen comes from Gravesend) ; Gravesend.

10. *T. languessensis*, sp. n.

Type-specimen. In collection of M. Canu (a photograph of type-specimen in British Museum) ; Campanian ; Languesse, France.

11. *T. trifaux*, sp. n.

Type-specimen. British Museum, D. 15417 ; *mucronatus*-zone ; Rügen.

12. *T.* [*Cellepora*] *crepidula* (von Hagenow), 1839, Neues Jahrbuch, p. 275, pl. iv. fig. 10 (interpreted, however, by Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 97, pl. x. fig. 9) ; *mucronatus*-zone ; Rügen.

13. *T.* [*Membraniporella*] *castrum* (Brydone), 1909, Geol. Mag. dec. v. vol. vi. p. 398, pl. xxii. figs. 4, 5 ; *mucronatus*-zone ; Trimingham.

14. *T.* [*Cribrilina*] *triceps* (Marsson), 1887, Pal. Abh. vol. iv. Heft 1, p. 98, pl. x. fig. 12 ; *mucronatus*-zone ; Rügen.

15. *T.* [*Cribrilina*] *sherborni* (Brydone), 1906, Geol. Mag. dec. v. vol. iii. p. 296, text-fig. 7 on p. 296 ; *mucronatus*-zone ; Trimingham.

16. *T.* [*Cellepora, Escharoïdes*] *pinguis* (von Hagenow), 1851, Bry. Maastr. Kreid. p. 88, pl. x. fig. 15 ; Maastrichter-Kalk ; Maastricht.

17. *T. cerberus*, sp. n.

Type-specimen. British Museum, D. 28205; Danian; Faxe, Denmark.

18. *T.* [*Reptescharellina*] *prolifera* (Gabb & Horn), 1862, Journ. Ac. Nat. Sci. Philadelphia, series ii. vol. v. part ii. p. 146, pl. xx. fig. 28; Danian; New Jersey.

II. HAPLOCEPHALOPORA, gen. nov.

Species. *H. uniceps*, sp. n.

Type-specimen. British Museum, D. 28214; Danian; Faxe.

III. PHRACTOPORA, gen. nov.

Genotype. *P. constrata.*

Tabular Diagnoses of the Species.

A. A V-shaped mass of secondary tissue grows proximally to the median process of the apertural bar and forms a secondary front wall; incrusting forms.
  1. V-shaped mass broad .... 1. *P. operta.*
  2. V-shaped mass narrow .... 2. *P. constrata.*

B. Secondary tissue above the V-shaped mass grows proximally to form a secondary front wall.
  1. Secondary front wall incomplete.
    α. Incrusting .... 3. *P. obducta.*
    β. Erect, unilaminar .... 4. *P. obtecta.*
  2. Secondary front wall complete; erect cylindrical .... 5. *P. gastropora.*

1. *P. operta*, sp. n.

Type-specimen. British Museum, D. 17997; *mucronatus*-zone; Rügen.

2. *P. constrata*, sp. n.

Type-specimen. British Museum, D. 15332; *mucronatus*-zone; Rügen.

3. *P. obducta*, sp. n.

Type-specimen. British Museum, D. 15395; *mucronatus*-zone; Rügen.

4. *P. obtecta*, sp. n.

Type-specimen. British Museum, D. 15019, *mucronatus*-zone; Rügen.

5. *P.* [*Porina*] *gastropora* (Marsson), 1887, Pal. Abh. vol. iv. Heft 1, p. 86, pl. viii. fig. 11 ; *mucronatus*-zone ; Rügen.

IV. POLYCEPHALOPORA, gen. nov.

Genotype. *P. hydra.*

Tabular Diagnoses of the Species.

A. Apertures generally surrounded by three avicularia only, two proximal-lateral and one distal-lateral	1. *P. trigemina.*
B. Apertures generally surrounded with four avicularia.	
I. Incrusting, unilaminar ; œcia shorter, about once-and-a-half as long as broad.	
a. Less secondary interœcial tissue	2. *P. rustica.*
b. More secondary interœcial tissue	3. *P. hydra.*
II. Incrusting, unilaminar ; œcia longer, about twice as long as broad	4. *P. plicatella.*
III. Incrusting, multilaminar ; œcia about once-and-a-half as long as broad.	
a. Costæ less than 20	5. *P. multiplex.*
b. Costæ more than 20	6. *P. insignis.*
C. Apertures generally surrounded with five avicularia.	
I. Incrusting or erect, unilaminar.	
a. Less coarse, $\frac{2}{3}$ mm. long, or less ; apertural bar very swollen	7. *P. turgida.*
b. Coarser.	
1. A fair amount of secondary interœcial tissue	8. *P. multiceps.*
2. Little or no secondary interœcial tissue.	9. *P. bulbifera.*
II. Erect, bilaminar	10. *P. pentapora.*

Membraniporella obscurata, Brydone (1916, Geol. Mag. dec. vi. vol. iii. p. 99, pl. vi. figs. 9, 10), from the *cortestudinarium*-zone of S. England is possibly a *Polycephalopora*, but the figure and description are not clear enough to certify this.

1. *P. trigemina,* sp. n.

Type-specimen. British Museum, D. 29003 ; *quadratus*-zone ; *depressus*-subzone ; E. of Brighton, Sussex.

2. *P.* [*Semiescharipora*] *rustica* (d'Orbigny), Pal. Franç. 1852, pl. 718. figs. 13–16, 1853, p. 484 ; Senonian ; Sainte-Colombe, France.

3. *P. hydra,* sp. n.

Type-specimen. British Museum, D. 18001 ; *mucronatus*-zone ; Rügen.

4. *P.* [*Cellepora, Escharina*] *plicatella* (von Hagenow), 1851, Bry. Maastr. Kreid. p. 89, pl. x. fig. 12; Maastrichter-Kalk; Maastricht.

5. *P. multiplex*, sp. n.

Type-specimen. British Museum, D. 28944; *quadratus*-zone, *depressus*-subzone; N.E. of Worthing, Sussex.

6. *P.* [*Multescharipora*] *insignis* (d'Orbigny), Pal. Franç. 1852, pl. 720. figs. 11–15, 1853, p. 496; Senonian, [Campanian]; Meudon, France.

7. *P. turgida*, sp. n.

Type-specimen. British Museum, D. 29000; *quadratus*-zone, *pillula*-subzone; E. of Brighton, Sussex.

8. *P. multiceps*, sp. n.

Type-specimen. British Museum, D. 15370; *mucronatus*-zone; Rügen.

9. *P.* [*Escharina*] *bulbifera* (Römer), 1840, Verstein. norddeutsch. kreid. p. 14, pl. v. fig. 6; Ober kreidemergel [Campanian]; Gehrden, Hanover.

10. *P.* [*Escharipora*] *pentapora* (D'Orbigny), Pal. Franç. 1851, pl. 685. figs. 5–8, 1852, p. 224; Senonian; Sainte-Colombe, France.

V. ANTROPORA, gen. nov.

Genotype. *A. cavernosa.*

Tabular Diagnoses of the Species.

A. A secondary front wall aimed at, though not attained.	
1. Incrusting, typically with five avicularia ..	1. *A. specus.*
2. Erect, unilaminar, typically with four avicularia, though often more	2. *A. spelunca.*
B. A complete secondary front wall attained.	
1. Generally two longitudinal slits left above the intraterminal front wall, which may, however, be united proximally; apertures very large, about ½ mm. in diameter	3. *A. cavernosa.*
2. A semilunar slit left immediately proximally to the apertures; apertures not nearly ½ mm. in diameter	4. *A. lunaris.*

1. *A. specus*, sp. n.

Type-specimen. British Museum, D. 15362; *mucronatus*-zone; Rügen.

2. *A. spelunca*, sp. n.

Type-specimen. British Museum, D. 14972; *mucronatus*-zone; Rügen.

3. *A. cavernosa*, sp. n.

Type-specimen. British Museum, D. 15438; *mucronatus*-zone; Rügen.

4. *A. lunaris*, sp. n.

Type-specimen. In the collection of M. Canu (a photograph of type-specimen in British Museum); Campanian; Meudon.

e. *Pnictoporinæ*, subfam. nov.

Pnictopora, gen. nov.

Genotype. *P. suffocata.*

Tabular Diagnoses of the Species.

A. Secondary tissue like bark, but not very rugose.	
1. Secondary tissue well developed, but not enough to swamp the avicularia to a great extent.	
a. Incrusting	1. *P. alligata.*
b. Erect, cylindrical	2. *P. suffocata.*
2. Secondary tissue more developed, so that even the avicularia tend to be swamped	3. *P. strangulata.*
B. Secondary tissue very rugose	4. *P. obstructa.*

1. *P. alligata*, sp. n.

Type-specimen. British Museum, D. 8283; *coranguinum*-zone; Gillingham, Kent.

2. *P. suffocata*, sp. n.

Type-specimen. British Museum, D. 28525; *cortestudinarium*-zone; Luton, Kent.

3. *P. strangulata*, sp. n.

Type-specimen. British Museum, D. 21180; *coranguinum*-zone; Span Hill, Oxon.

4. *P. obstructa*, sp. n.

Type-specimen. British Museum, D. 21183; *coranguinum*-zone; Wooburn Green, Bucks.

f. CASTANOPORINÆ, subfam. nov.

Tabular Diagnoses of the Genera.

A. No secondary front wall formed.	
I. Ring of secondary aperture incomplete.	
a. Proximal shield, if present, formed by the flattening of the apertural bar.	
1. Smaller.	
α. No avicularia	I. *Anornithopora.*
β. Avicularia pointing in various directions	II. *Carydiopora.*
2. Larger, avicularia of two kinds, (1) directed distally and (2) directed proximally (the latter kind may be very rare or absent)...................	III. *Castanopora.*
3. Larger, avicularia (if present) of one kind only, proximally directed......	IV. *Rhiniopora.*
b. Proximal shield formed by the ends of the apertural bar produced upwards, fusing and making a hoop over the apertural bar	V. *Phrynopora.*
II. Ring of secondary aperture complete.	
a. Costæ finer, apertural ring solid	VI. *Hesperopora.*
b. Costæ coarser, apertural ring with large perforations	VII. *Stichocados.*
B. A secondary front wall (lamina peristomica of Jullien).	
I. Secondary front wall formed by the expansion of branched apertural spines and ? of apertural avicularia....................	VIII. *Ubaghsia.*
II. Secondary front wall formed by the expansions of a pair of apertural avicularia.	
a. Erect, unilaminar	IX. *Steginopora.*
b. Erect, bilaminar	X. *Disteginopora.*

I. ANORNITHOPORA, gen. nov.

Genotype. *A. involucris.*

Tabular Diagnoses of the Species.

A. Costæ about 17; intraterminal front wall less consolidated; apertural spines 4	1. *A. involucris.*
B. Costæ about 10–12; intraterminal front wall more consolidated; apertural spines 5 or 6 .	2. *A. irrostrata.*

1. *A. involucris*, sp. n.

Type-specimen. British Museum, D. 28111; *quadratus*-zone, [*quadratus*-subzone]; N.E. of Worthing, Sussex.

2. *A. irrostrata*, sp. n.

Type-specimen. British Museum, D. 28994; *quadratus*-zone, *pillula*-subzone; N.E. of Worthing, Sussex.

II. CARYDIOPORA, gen. nov.

Genotype. *C. nucula.*

Tabular Diagnoses of Species.

A. Avicularia fewer, smaller, and less pointed; less interœcial secondary tissue.
  1. More costæ, about 20 .... 1. *C. nucella.*
  2. Fewer costæ, about 14 .... 2. *C. coryli.*
B. Avicularia more, larger and more pointed; more interœcial secondary tissue; costæ 12–14 .... 3. *C. nucula.*

1. *C. nucella*, sp. n.

Type-specimen. British Museum, D. 28995; *quadratus*-zone, *depressus*-subzone; E. of Brighton, Sussex.

2. *C. coryli*, sp. n.

Type-specimen. British Museum, D. 28998; *quadratus*-zone, *pillula*-subzone; North Lancing, Sussex.

3. *C. nucula*, sp. n.

Type-specimen. British Museum, D. 28993; *Marsupites*-zone; Brighton, Sussex.

III. CASTANOPORA, gen. nov.

Genotype. *C. castanea.*

Tabular Diagnoses of Species.

A. Large, proximally directed avicularia abundant. 1. *C. retrorsa.*
B. Large, proximally directed avicularia absent or rare.
  I. Length not more than ·75 mm. and œcia very stout .... 2. *C. dibleyi.*
  II. Length about 1 mm.; œcia longer rather than broad.
    a. Costæ more than 25.
      1. Avicularia more proximally placed with regard to the aperture; incrusting .... 3. *C. ornata.*
      2. Avicularia distally and laterally placed with regard to the aperture; erect, bilaminar .... 4. *C. magnifica.*

b. Costæ 20–25.
  1. Costæ 20–22, 5–6 lateral costal fusions.
    α. Apertures supra-semicircular; apertural spines not much thickened, apertural bar flattened, not very high .... 5. *C. nucifera.*
    β. Apertures somewhat cribriline; apertural spines considerably thickened, apertural bar stouter than *α* .... 6. *C. juglans.*
  2. Costæ 20–25, 6–7 lateral costal fusions.
    α. Apertures hardly cribriline, length about ·9 mm.; proximally directed avicularia ? occasional .... 7. *C. castanea.*
    β. Apertures cribriline, length at least 1 mm.; proximally directed avicularia rare or absent.
      a. Length 1–1½ mm.; aperture slightly cribriline .... 8. *C. glandulosa.*
      b. Length 2 mm.; aperture markedly cribriline .... 9. *C. guascoi.*

1. *C. retrorsa*, sp. n.

Type-specimen. British Museum, D. 21170; *Marsupites*-zone; Odiham, Hants.

2. *C.* [*Cribrilina*] *dibleyi* (Brydone), 1906, Geol. Mag. dec. v. vol. iii. p. 297, text-fig. 8 on p. 297; *mucronatus*-zone; Trimingham, Norfolk.

3. *C.* [*Repteschariporа*] *ornata* (d'Orbigny), Pal. Franç. 1852, pl. 720. figs. 6–8, 1853, p. 494; Senonian; Vendôme, France.

4. *C.* [*Escharipora*] *magnifica* (d'Orbigny), Pal. Franç. 1851, pl. 686. figs. 1–5; *Escharipora pretiosa*, d'Orbigny, 1852, Pal. Franç. p. 227; Senonian [Campanian]; Sainte Colombe and Royan, France.

5. *C. nucifera*, sp. n.

Type-specimen. British Museum, D. 15600; *mucronatus*-zone; Trimingham, Norfolk.

6. *C. juglans*, sp. n.

Type-specimen. British Museum, D. 15608; *mucronatus*-zone; Trimingham, Norfolk.

7. *C. castanea*, sp. n.

Type-specimen. British Museum, D. 16654; *mucronatus*-zone; Rügen.

8. *C. glandulosa,* sp. n.

Type-specimen. British Museum, D. 15009; *mucronatus*-zone; Rügen.

9. *C.* [*Escharipora*] *guascoi* (Ubaghs); 1865, Verh. nat. Verein. pruss. Rheinlande und Westphalens, vol. xxii. p. 51, pl. ii. fig. 3; Maastrichtian; Valkenburg, near Maastricht.

IV. RHINIOPORA, gen. nov.

Tabular Diagnoses of the Species.

A. Avicularia numerous.
I. Costæ more than 30 .... 1. *R. labiata.*
II. Costæ generally less than 30 .... 2. *R. aviculosa.*
B. Avicularia rare or absent.
I. Length about 1 mm.; costæ about 16 to 20; 5 or 6 lateral costal fusions.
a. Incrusting.
1. Costæ fewer, 16–18; aperture sub-semicircular .... 3. *R. radiata.*
2. Costæ more, 18–20; aperture supra-semicircular .... 4. *R. aspera.*
b. Erect, unilaminar .... 5. *R. asperula.*
c. Erect, cylindrical .... 6. *R. hispida.*
II. Length 1·5–1·7 mm.
a. Costæ 20–23; apertural spines 4; 6–7 lateral costal fusions; length 1·5 mm. Aperture semicircular or supra-semicircular.
1. Incrusting .... 7. *R. cacus.*
2. Erect, unilaminar .... 8. *R. horrida.*
b. Costæ about 26; apertural spines 6–7; about 7 lateral costal fusions; length 1·6–1·7 mm.; aperture slightly cribriline .... 9. *R. scabra.*
c. Costæ about 28–30; apertural spines 6–7; about 7 lateral costal fusions; length 15–17 mm.; aperture markedly cribriline . . 10. *R. jurassica.*

It is probable that *Cellepora perforata,* Quenstedt, 1879, Pet. Deutsch. Abt. i. Band. vi. Heft 2, p. 312, pl. cliv. fig. 37, Maastricht, is a *Rhiniopora,* but the characters cannot be determined in sufficient detail to place it.

1. *R.* [*Cribrilina*] *labiata* (Levinsen), 1907, Over. ov. d. Kgl. Dankse Vidensk. Selsk. Forhand. for 1907, No. 4, pp. 155–6, 158, Plate opposite p. 160, fig. 1; [Cretaceous].

2. *R. aviculosa,* sp. n.

Type-specimen. In collection of M. Canu (photograph of type-specimen in British Museum); Maastrichtian; Maastricht.

3. *R.* [*Reptescharella*] *radiata* (d'Orbigny), Pal. Franç. 1852, pl. 716. figs. 4–6, 1853, p. 468. *Reptescharella subradiata*, d'Orbigny, 1854, Pal. Franç. p. 1106; Senonian [Campanian]; Meudon and Saintes, France.

4. *R. aspera*, sp. n.

Type-specimen. British Museum, D. 15620; *mucronatus*-zone; Trimingham, Norfolk.

5. *R.* [*Cribrilina*] *asperula* (Marsson), 1887, Pal. Abh. vol. iv. Heft 1, p. 97, pl. x. fig. 8; *mucronatus*-zone; Rügen.

6. *R. hispida*, sp. n.

Type-specimen. British Museum, D. 14996; *mucronatus*-zone; Rügen.

7. *R.* [*Cribrilina*] *cacus* (Brydone), 1913, Geol. Mag. dec. v. vol. x. p. 437, pl. xiv. figs. 6–8; *mucronatus*-zone; Trimingham, Norfolk.

8. *R. horrida*, sp. n.

Type-specimen. British Museum, D. 14171; *mucronatus*-zone; Rügen.

9. *R. scabra*, sp. n.

Type-specimen. British Museum, D. 14207; *mucronatus*-zone; Rügen.

10. *R.* [*Membranipora*] *jurassica* (Gregory), 1894, Geol. Mag. dec. iv. vol. i. p. 62, text-fig. 1; Bathonian; Ranville. [Maastrichtian; Maastricht]. *Type-specimen.* British Museum, D. 180.

V. PHRYNOPORA, gen. nov.

Genotype. *P. bufo.*

Tabular Diagnoses of the Species.

A. Apertural hoop narrow and slight	1. *P. bufo.*
B. Apertural hoop enormously swollen and enlarged	2. *P. arcifera.*

1. *P. bufo*, sp. n.

Type-specimen. British Museum, D. 14974; *mucronatus*-zone; Rügen.

2. *P.* [*Ubaghsia*] *arcifera* (Jullien), 1886, Bull. Soc. Zool. France, vol. xi. p. 618, pl. xx. figs. 2–4; Campanian; Meudon.

VI. Hesperopora, gen. nov.

Genotype. *H. occidentalis.*

Tabular Diagnoses of the Species.

A. Œcia nearly as broad as long; secondary aperture not so well-formed and subcircular.	
I. Costæ about 12; an occasional avicularium ..	1. ? *H. walfordi.*
II. Costæ about 16........................	2. *H. occidentalis.*
B. Œcia nearly twice as long as broad; secondary aperture more tubular and subtriangular; costæ about 16	3. *H. danica.*

1. ? *H.* [*Cribrilina*] *walfordi* (Pergens), 1894, Bull. Soc. Belg. Géol. Pal. Hyd. vol. vii. Mémoirs, p. 187, pl. xi. fig. 6; Maastrichtian; Fauquemont.

2. *H. occidentalis*, sp. n.

Type-specimen. British Museum, D. 19233; Danian; New Jersey.

3. *H. danica*, sp. n.

Type-specimen. British Museum, D. 28304; Danian; Faxe, Denmark.

VII. Stichocados, Marsson.

Genotype. *S. verruculosus.*

Tabular Diagnoses of the Species.

A. Costæ 12–14, with 4–5 lateral fusions; length about ·8 mm.	1. *S. möenensis.*
B. Costæ about 12, with 3 lateral fusions; length ·6–·7 mm.	2. *S. ordinatus.*
C. Costæ about 9, with 3–4 lateral fusions; length about ·5 mm.	3. *S. compositus.*
D. Costæ 6–7, with 2 lateral fusions; length about ·6 mm.	4. *S. verruculosus.*

1. *S. möenensis,* sp. n.

Type-specimen. In collection of M. Canu (a photograph of type-specimen in British Museum); Danian; Möen.

2. *S. ordinatus,* sp. n.

Type-specimen. British Museum, D. 15115; *mucronatus*-zone; Rügen.

3. *S. compositus,* sp. n.

Type-specimen. British Museum, D. 18977; Danian; New Jersey, U.S.A.

4. *S. verruculosus,* Marsson, 1887, Pal. Abh. Band iv. Heft 1, p. 101, pl. x. fig. 15; *mucronatus*-zone; Rügen.

VIII. UBAGHSIA, Jullien.

Genotype. *U. reticulata.*

Tabular Diagnoses of the Species.

- A. Apertural spines with few branches.
  - I. Apertures, avicularia and other spaces in the secondary front wall form a regular pattern; a shallow groove proximally placed with regard to the aperture in the secondary front wall .... 1. *U. ocellata.*
  - II. Apertures, avicularia, and other spaces in the secondary front wall very irregularly arranged; no shallow groove as in I. .... 2. *U. reticulata.*
- B. Apertural spines with many branches.
  - I. Smaller; apertures, avicularia, and other spaces in the secondary front wall form a regular pattern; a shallow groove proximally placed with regard to the aperture in the secondary front wall .... 3. *U. demorgani.*
  - II. Larger; apertures, avicularia, and other spaces in the secondary front wall very irregularly arranged; no shallow groove as in I. .... 4. *U. meudonensis.*

1. *U.* [*Steginopora*] *ocellata* (J. Jullien), 1886, Bull. Soc. Zool. France. vol. xi. p. 614, pl. xix. figs. 1–3; Senonian [Campanian]; Port Brehay, France.

2. *U.* [*Steginopora*] *reticulata* (Ubaghs), 1865, Verh. nat. Verein. pruss. Rhein. Westphalens, vol. xxii. p. 55, pl. ii. *a*, fig. 7; Maastrichtian; Valkenberg and Geulem near Maastricht.

3. *U.* [*Steginopora*] *demorgani* (Jullien), 1886, Bull. Soc. Zool. France, vol. xi. p. 615, pl. xix. figs. 4–5, pl. xx. fig. 1 ; Senonian [Campanian] ; near Meudon, France.

4. *U.* [*Steginopora*] *meudonensis* (Jullien), 1886, op. cit. p. 614, pl. xvii. & pl. xviii. figs. 1–3 ; Senonian [Campanian] ; near Meudon, France.

IX. Steginopora, d'Orbigny.

Genolectotype. *S. ornata.*

Tabular Diagnoses of the Species.

A. Larger ; paired avicularia do not project above secondary front wall	1. *S. ornata.*
B. Smaller ; paired avicularia project above secondary front wall	2. *S. aculeata.*

1. *S. ornata,* d'Orbigny, Pal. Franç. 1852, pl. 721. figs. 1–4, 1853, p. 501 ; Senonian ; Sainte-Colombe, France.

2. *S. aculeata,* d'Orbigny, Pal. Franç. 1852, pl. 721. figs. 5–8, 1853, p. 502 ; Senonian ; Sainte-Colombe, France.

X. Disteginopora, d'Orbigny, 1852, Pal. Franç. p. 235 (= *Thoracophora*, J. Jullien, 1886, Bull. Soc. Zool. France, vol. xi. p. 610).

Genotype and only species here included. *D.* [*Eschara*] *horrida* (d'Orbigny), 1850, Prod. Pal. vol. ii. p. 264 ; Senonian [Campanian] ; Meudon, France.

g. *Diacanthoporinæ*, subfam. nov.

Diacanthopora, gen. nov.

Genotype. *D. bispinosa.*

Tabular Diagnoses of the Species.

A. Avicularia consisting of a pair distally placed with regard to each aperture and directed outwards	1. *D. bispinosa.*
B. Avicularia consisting of a pair proximally placed with regard to each aperture and directed inwards.	
I. Œcia fairly close together	2. *D. abbottii.*
II. Œcia widely spaced	3. *D. distans.*

1. *D. bispinosa*, sp. n.

Type-specimen. British Museum, D. 8986; Danian; Faxe, Denmark.

2. *D.* [*Escharipora*] *abbottii* (Gabb & Horn), 1862, Journ. Acad. Nat. Sci. Philadelphia, 2nd series, vol. v. part ii. p. 149, pl. xx. fig. 33; Danian; New Jersey, U.S.A.

3. *D.* [*Escharipora*] *distans* (Gabb & Horn), 1862, op. cit. p. 148, pl. xx. fig. 32; Danian; New Jersey, U.S.A.

h. *PELMATOPORINÆ*, subfam. nov.

Tabular Diagnoses of the Genera.

A. Secondary aperture, when present, formed of distal shield only.	
I. Distal shield, when present, formed of a pair of avicularia.	
a. Distal shield, when present, incomplete ..	I. *Pelmatopora.*
b. Distal shield always present, complete and stout	II. *Decurtaria.*
II. Distal shield always present, formed of apertural spines	III. *Murinopsia.*
B. Proximal shield of secondary aperture, in so far as it is present, formed of a median process of the apertural bar which ultimately fuses with the proximal pair of apertural spines	IV. *Sandalopora.*
C. Proximal shield of secondary aperture, in so far as it is present, formed by the upward growth of a pair of avicularia, placed laterally and proximally with regard to the aperture, fusing over the apertural bar, which thus does not take part in its formation.	
I. One row of pelmata only (a doubtful second row is sometimes distinguishable)	V. *Ichnopora.*
II. Two or more rows of pelmata.	
a. Apertures remain wide; tissue of secondary aperture spreads around, and finally forms a secondary front wall (lamina peristomica of Jullien)	VI. *Batrachopora.*
b. Apertures become tubular and further growth of secondary tissue prolongs the tubular aperture	VII. *Pachydera.*

I. PELMATOPORA, gen. nov.

Genotype. *P. pero.*

Tabular Diagnoses of the Species.

A. Avicularia do not replace distal apertural spines (*i. e.*, there is no distal shield).
  I. Median area of fusion is imperforate and there are no secondary pelmata.
    a. Intraterminal front wall well arched.
      1. Little or no secondary interœcial tissue; avicularia small and blunt.
        α. Avicularia sporadic .... 1. *P. calceata.*
        β. Avicularia tend to be arranged 2 proximally and 2 distally with regard to the aperture .... 2. *P. crepidaria.*
      2. A fair amount of secondary interœcial tissue .... 3. *P. solearis.*
    b. Intraterminal front wall flat.
      1. Erect, unilaminar.................... 4. *P. interrupta.*
      2. Erect, bilaminar.
        α. Costæ about 20 .... 5. *P. chrysalis.*
        β. Costæ 25 or more .... 6. *P. striata.*
  II. Median area of fusion with two rows of perforations; secondary pelmata present.
    a. A pair of avicularia placed regularly, proximally and laterally with regard to each aperture .... 7. *P. d'orbignyi.*
    b. Avicularia sporadic.
      1. Costæ 12–16; apertures large.
        α. Intraterminal front wall distinctly arched.
          a. Costæ 12 .... 8. *P. pauciclaria.*
          b. Costæ 15 .... 9. *P. quadrata.*
        β. Intraterminal front wall fairly flat .... 10. *P. fragilis.*
      2. Costæ more than 16, length nearly 1 mm.
        α. Less secondary interœcial tissue ...... 11. *P. insignis.*
        β. More secondary interœcial tissue.
          a. Apertures smaller, tending to be pointed .... 12. *P. suffulta.*
          b. Apertures larger, tending to be rounded .... 13. *P. fecampensis.*
      3. Costæ more than 16, length not much over ½ mm.
        α. Apertures larger.................... 14. *P. filliozati.*
        β. Apertures smaller .... 15. *P. gasteri.*
  III. Median area of fusion with more than two rows of perforations; secondary and tertiary pelmata.
    a. Incrusting; length less than 1 mm.
      α. Costæ 15 .... 16. *P. plantaris.*
      β. Costæ 18-20 .... 17. *P. simplex.*
    b. Erect, unilaminar; length more than 1 mm.; costæ 16-18 .... 18. *P. pero.*
B. Apertural spines are replaced by avicularia (*i. e*, a distal shield more or less present).
  I. Both pairs of apertural spines are replaced by avicularia .... 19. *P. quadrivolucris.*
  II. Distal pair only of apertural spines is replaced by avicularia.

a. Proximal apertural spines are often still visible and sometimes the distal pair as well	20. *P. brydonei*.
b. Proximal apertural spines (except in neanastic stages) entirely swamped by secondary tissue, also (except in neanastic stages) the distal pair, which are replaced by a pair of avicularia.	
1. Avicularia minute, though they may be somewhat lengthened	21. *P. bidens*.
2. Avicularia stout, short, and peg-like; costæ 15–18.	
α. Incrusting	22. *P. marsupitorum*.
β. Erect, unilaminar	23. *P. roedeanensis*.
3. Avicularia long and hardly flattened.	
α. Costæ about 15–20.	
1. Length about 1 mm.	
a. Incrusting	24. *P. danktonensis*.
b. Unilaminar, erect	25. *P. lancingensis*.
2. Length less than 1 mm.; outermost intercostal perforations less slot-like.	
a. Incrusting.	
α. Less secondary interœcial tissue	26. *P. saltdeanensis*.
β. More secondary interœcial tissue	27. *P. collium*.
b. Unilaminar, erect	28. *P. promontoriorum*.
β. Costæ about 12–15; outermost intercostal perforations circular; length considerably less than 1 mm.	
1. Incrusting	29. *P. ranunculoides*.
2. Unilaminar, erect	30. *P. lacuum*.
γ. Costæ 10; otherwise as *β*; incrusting	31. *P. gyrinoides*.
4. Avicularia flattened and broad distally, and tend to bifurcate	32. *P. somptingensis*.
5. Avicularia very broad distally and distinctly bilobed.	
α. Incrusting	33. *P. gregoryi*.
β. Erect, unilaminar	34. *P. palmata*.
γ. Erect, bilaminar	35. *P. dumicornis*.

1. *P. calceata*, sp. n.

Type-specimen. British Museum, D. 4032; Lower Senonian; Chatham, Kent.

2. *P. crepidaria*, sp. n.

Type-specimen. British Museum, D. 21200; *coranguinum*-zone; Wooburn Green, Bucks.

3. *P. solearis*, sp. n.

Type-specimen. British Museum, D. 21211; *coranguinum*-zone; Hurley Bottom, Berks.

4. *P*. [*Semiescharipora*] *interrupta* (d'Orbigny). Pal. Franç. 1852, pl. 719. figs. 5–8, 1853, p. 487; Senonian;

Saintes, France. [Interpreted according to Canu's identification of a specimen from the Coniacian of Tours, in his collection, of which a photograph is in the British Museum.]

5. *P.* [*Escharipora*] *chrysalis* (d'Orbigny), Pal. Franç. 1851, pl. 686. figs. 6–8, 1852, p. 228 ; Senonian ; Fief-neuf and Pons, France.

6. *P.* [*Escharipora*] *striata* (d'Orbigny), Pal. Franç. 1851, pl. 686. figs. 9–12, 1852, p. 229; [Senonian] ; Sainte-Colombe. =*Escharipora mumia*, d'Orbigny, Pal. Franç. 1851, pl. 687. figs. 4–6, 1852, p. 233 ; [Senonian] ; Sainte-Colombe, *fide* Canu, 1900, Bull. Soc. Geol. France, series iii. vol. xviii. p. 450. [Interpreted according to Canu's identification of a specimen from the Coniacian of Villedieu, in his collection, of which a photograph is in the British Museum.]

7. *P. d'orbignyi*, sp. n.

Type-specimen. British Museum, D. 28453; Coniacian; St. Avertin.

8. *P. pauciclavia*, sp. n.

Type-specimen. British Museum, D. 28273 ; base of *coranguinum*-zone ; E. of Cuckmere Haven, Sussex.

9. *P. quadrata*, sp. n.

Type-specimen. British Museum, D. 28271 ; base of *coranguinum*-zone ; E. of Cuckmere Haven, Sussex.

10. *P.* [*Semiescharipora*] *fragilis* (d'Orbigny), Pal. Franç. 1852, pl. 717. figs. 8–11, 1853, p. 480; Senonian [Coniacian] ; Fécamp. [Interpreted according to Canu's identification of a specimen from the Emscherian of Fécamp, in his collection, of which there is a photograph in the British Museum.]

11. *P.* [*Cribrilina*] *insignis* (Canu), 1911, Ann. Mus. Nac. Buenos Aires, vol. xxi. (3rd series, vol. xiv.) p. 252, pl. vi. figs. 7–10 ; Rocanéan ; Roca, Argentine, S. America.

12. *P.* [*Cribrilina*] *suffulta* (Brydone), 1913, Geol. Mag. dec. v. vol. x. p. 436, pl. xiv. fig. 4 ; *coranguinum*-zone ; Gravesend, Kent.

13. *P. fecampensis*, sp. n.

Type-specimen. British Museum, D. 28473; Senonian, Coniacian; Fécamp, France.

14. *P. filliozati*, sp. n.

Type-specimen. In collection of M. Canu (photograph of type-specimen in British Museum); Emscherian; Fécamp, France.

15. *P. gasteri*, sp. n.

Type-specimen. British Museum, D. 28274; low in *coranguinum*-zone; Cuckmere Haven, Sussex.

16. *P. plantaris*, sp. n.

Type-specimen. British Museum, D. 19620; *coranguinum*-zone; Alton, Hants.

17. *P. simplex*, sp. n.

Type-specimen. British Museum, D. 28281; *quadratus*-zone; Newhaven, Sussex.

18. *P. pero*, sp. n.

Type-specimen. British Museum, D. 23405; top of *coranguinum*-zone; Epsom, Surrey.

19. *P. quadrivolucris*, sp. n.

Type-specimen. British Museum, D. 28907; *coranguinum*-zone; West Horsley, Surrey.

20. *P. brydonei*, sp. n.

Type-specimen. British Museum, D. 23396; top of *coranguinum*-zone; Epsom, Surrey.

21. *P. bidens*, sp. n.

Type-specimen. British Museum, D. 28934; *quadratus*-zone, *pillula*-subzone; North Lancing, Sussex.

22. *P. marsupitorum*, sp. n.

Type-specimen. British Museum, D. 28867; *Marsupites*-zone; Brighton, Sussex.

23. *P. roedeanensis*, sp. n.

Type-specimen. British Museum, D. 28868; *Marsupites*-zone; Brighton, Sussex.

24. *P. danktonensis*, sp. n.

Type-specimen. British Museum, D. 23963; *quadratus*-zone, [*depressa*-subzone]; Sompting, Sussex.

25. *P. lancingensis*, sp. n.

Type-specimen. British Museum, D. 28947; *quadratus*-zone, [*depressa*-subzone]; North Lancing, Sussex.

26. *P. saltdeanensis*, sp. n.

Type-specimen. British Museum, D. 28842; *quadratus*-zone, *depressa*-subzone; E. of Brighton, Sussex.

27. *P. collium*, sp. n.

Type-specimen. British Museum, D. 28824; *quadratus*-zone, [*pillula*-subzone]; North Lancing, Sussex.

28. *P. promontoriorum*, sp. n.

Type-specimen. British Museum, D. 28930; *quadratus*-zone, [*pillula*-subzone]; North Lancing, Sussex.

29. *P. ranunculoides*, sp. n.

Type-specimen. British Museum, D. 28856; *quadratus*-zone, *depressa*-subzone; E. of Brighton, Sussex.

30. *P. lacuum*, sp. n.

Type-specimen. British Museum, D. 28862; *quadratus*-zone, [*pillula*-subzone]; North Lancing, Sussex.

31. *P. gyrinoides*, sp. n.

Type-specimen. British Museum, D. 28270; *quadratus*-zone; E. of Brighton, Sussex.

32. *P. somptingensis*, sp. n.

Type-specimen. British Museum, D. 28762; *quadratus*-zone, [*quadratus*-subzone]; Sompting, Sussex.

33. *P.* [*Cribrilina*] *gregoryi* (Brydone), 1906, Geol. Mag. dec. v. vol. iii. p. 300, text-fig. 13 on p. 300; and 1913, Geol. Mag. dec. v. vol. x. p. 436, pl. xiv. figs. 1, 2; *quadratus*-zone, *quadratus*-subzone; Upham, Hants.

34. *P. palmata*, sp. n.

Type-specimen. British Museum, D. 8010; *quadratus*-zone, *quadratus*-subzone; Winchester, Hants.

35. *P. damicornis*, sp. n.

Type-specimen. British Museum, D. 20204; *quadratus*-zone; Seaford, Sussex.

II. DECURTARIA, Jullien, 1886, Bull. Soc. Zool. France, vol. xi. p. 606.

Genotype and only species here recognized. *D.* [*Semiescharipora*] *cornuta* (Beissel), 1865, Nat. Ver. Hollandsche Maatsch. Wet. Haarlem, ser. 2, vol. xxii. Art. 3, p. 58, pl. vii. figs. 77–81; Maastrichtian; Aachen, Germany [=*Prosoporella*, Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 100, with same genotype].

III. MURINOPSIA, Jullien, 1886, Bull. Soc. Zool. France, vol. xi. p. 608.

[=*Lagodiopsis*, Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 99, genotype *Multescharipora francqana*, d'Orbigny.]

Genotype. *M. galeata*.

Tabular Diagnoses of the Species.

A. A pair of tubular avicularia project distally to the distal shield	1. *M. francqana.*
B. More than one pair of tubular avicularia project distally to the distal shield	2. *M. galeata.*

1. *M.* [*Multescharipora*] *francqana* (d'Orbigny), Pal. Franç. 1852, pl. 734. figs. 6–8, 1853, p. 497; [Campanian]: Meudon, France.

2. *M.* [*Semiescharipora*] *galeata* (Beissel), 1865, Nat. Ver. Hollandsche Maatsch. Wet. Haarlem, series 2, vol. xxii. Art. 3, p. 55, pl. vi. figs. 70–75, pl. vii. fig. 76; Maastrichtian; Aachen, Germany.

IV. SANDALOPORA, gen. nov.

Genotype. *S. soccata*.

Tabular Diagnoses of the Species.

A. Median process of the apertural bar flattened into a proximal shield.
  I. Incrusting .... 1. *S. gallica.*
  II. Erect, bilaminar........................ 2. *S. lavardinensis.*
B. Median process of the apertural bar spiniform.
  I. Little or no interœcial secondary tissue.
    a. Length about 1 mm.; costæ 18–20; erect, unilaminar .... 3. *S. supplosa.*
    b. Length about $\frac{2}{3}$ mm; costæ about 15; erect, unilaminar.................... 4. *S. soccata.*
    c. Length about $\frac{1}{2}$ mm.; costæ about 12; incrusting......................... 5. *S. socculus.*
  II. A fair amount of interœcial secondary tissue; erect, cylindrical .... 6. *S. caligata.*

1. *S. gallica*, sp. n.

Type-specimen. British Museum, D. 28422; Turonian; Lavardin, France.

2. *S. lavardinensis*, sp. n.

Type-specimen. British Museum, D. 28421; Turonian; Lavardin, France.

3. *S. supplosa*, sp. n.

Type-specimen. British Museum, D. 28887; *cortestudinarium*-zone; Cuckmere Haven, Sussex.

4. *S. soccata*, sp. n.

Type-specimen. British Museum, D. 28257; *cortestudinarium*-zone; Cuckmere Haven, Sussex.

5. *S. socculus*, sp. n.

Type-specimen. British Museum, D. 24538; *coranguinum*-zone; Gillingham, Kent.

6. *S. caligata*, sp. n.

Type-specimen. British Museum, D. 2639; Lower Senonian; Chatham, Kent.

V. ICHNOPORA, gen. nov.

Genotype. *I. vestigium.*

Tabular Diagnoses of the Species.

A. Pelmata close to the middle line.	
I. Costæ more than 20, length about 1 mm.	
a. Erect, unilaminar.	
1. Avicularia placed more proximally	1. ? *I. dentata.*
2. Avicularia placed more distally	2. *I. socia.*
b. Erect, bilaminar	3. *I. campestris.*
II. Costæ 15-20, length less than 1 mm.; erect, cylindrical	4. *I. filiformis.*
B. Pelmata close to the middle line in some œcia and somewhat separate in others, length less than 1 mm.; incrusting	5. *I. vestigium.*
C. Pelmata widely separate with occasional perforations in the median area of fusion, and secondary pelmata.	
I. Costæ 15-20, length about 1 mm.	6. *I. amica.*
II. Costæ 10-15.	
a. Avicularia do not fuse above the apertural bar.	
1. Incrusting; avicularia very small and low	7. *I. cavia.*
2. Erect, unilaminar.	
α. Avicularia small and low	8. *I. cunicula.*
β. Avicularia very large and fairly high .	9. *I. asella.*
3. Erect, bilaminar.	
α. Avicularia rather small and low	10. ? *I. porigera.*
β. Avicularia large and very high	11. *I. leporina.*
b. Avicularia fuse above the apertural bar . .	12. *I. denticulata.*

1. ? *I.* [*Semiescharipora*] *dentata* (d'Orbigny), Pal. Franç. 1852, pl. 718. figs. 5–8, 1853, p. 482; Senonian; Meudon and Sainte-Colombe.

2. *I. socia*, sp. n.

Type-specimen. British Museum, D. 28479; Coniacian; Fécamp, France.

3. *I. campestris*, sp. n.

Type-specimen. British Museum, D. 28461; Coniacian; Fécamp, France.

4. *I.* [*Escharipora*] *filiformis* (d'Orbigny), 1852, Pal. Franç. p. 232, pl. 700. figs. 13–15; [Emscherian]; Fécamp, France. [Interpreted according to Canu's identifications of specimens from Fécamp in his collection, a photograph of one of which is in the British Museum.]

5. *I. vestigium*, sp. n.

Type-specimen. British Museum, D. 8133; *coranguinum*-zone; Gillingham, Kent.

6. *I. amica*, sp. n.

Type-specimen. In collection of M. Canu (a photograph of type-specimen in British Museum) ; Coniacian ; Fécamp.

7. *I. cavia*, sp. n.

Type-specimen. British Museum, D. 28451 ; Coniacian ; St. Avertin, France.

8. *I. cunicula*, sp. n.

Type-specimen. British Museum, D. 28437 ; Coniacian ; La Ribochère, France.

9. *I. asella*, sp. n.

Type-specimen. British Museum, D. 28449 ; Coniacian ; St. Avertin, France.

10. ? *I.* [*Eschara*] *porigera* (Stoliczka), 1872, "Cret. Fauna of Southern India, the Ciliopoda," Pal. Indica, ser. viii. vol. iv. no. ii. p. 15, pl. i. fig. 8 ; Arrialoor group ; Chokonadapooram.

11. *I.* [*Escharipora*] *leporina* (D'Orbigny), Pal. Franç. 1851, pl. 686. figs. 13–16, 1852, p. 230 ; Senonian ; Villavard, France. [Interpreted according to Canu's identification of a specimen from the Emscherian of Fécamp, in his collection, of which there is a photograph in the British Museum.]

12. *I.* [*Steginopora*] *denticulata* (Brydone), 1910, Geol. Mag. dec. v. vol. vii. p. 481, pl. xxxvi. figs. 1–3 ; *coranguinum*-zone ; Kent.

VI. BATRACHOPORA, gen. nov.

Genotype. *B. ranunculus.*

Tabular Diagnoses of the Species.

A. Aperture smaller than the intraterminal front wall.
  I. Paired avicularia remain small.
    a. Apertures comparatively small and narrow.
      1. Œcia widely spaced .... 1. *B. perforata.*
      2. Œcia fairly close.
        α. Erect, unilaminar .... 2. *B. ovalis.*
        β. Erect, bilaminar.................. 3. *B. royanensis.*
    b. Apertures comparatively wide ; costæ about 10 .... 4. *B. crassa.*

II. Paired avicularia large and (? always) meet over the apertural bar.
  a. Œcia smaller, 1 mm. or less .... 5. *B. ranunculus.*
  b. Œcia larger, more than 1 mm.
    1. Œcia larger, twice as long as broad .. 6. *B. aurita.*
    2. Œcia squatter, little longer than broad.
      α. Apertures wider; erect, unilaminar . 7. *B. coaxans.*
      β. Apertures narrower; incrusting .... 8. *B. convexa.*
B. Aperture nearly as large or as large as the intraterminal front wall; a secondary front wall is attained.
  I. Length rather less than 1 mm.; costæ about 6 or 7; intercostal fusions about 3.. 9. *B. hyla.*
  II. Length rather more than 1 mm.; costæ about 4 or 5; intercostal fusions about 2.. 10. *B. ornata.*

Unplaceable, but probably a *Batrachopora*, *Cellepora* (*Discopora*) *signata*, von Hagenow, 1851, Bry. Maastr. Kreid. p. 96, pl. x. fig. 17; Maastrichtian; Maastricht.

1. *B.* [*Cribrilina*] *perforata* (Marsson), 1887, Pal. Abh. vol. iv. Heft 1, p. 98, pl. x. fig. 11; *mucronatus*-zone; Rügen, Germany.

2. *B.* [*Semiescharipora*] *ovalis* (d'Orbigny), Pal. Franç. 1852, pl. 719. figs. 13–16, 1853, p. 488; Senonian [Maastrichtian]; Royan, France.

3. *B. royanensis*, sp. n.

Type-specimen. In the collection of M. Canu (a photograph of type-specimen in British Museum); Maastrichtian; Royan, France.

4. *B. crassa*, sp. n.

Type-specimen. British Museum, D. 16674; *mucronatus*-zone; Rügen, Germany.

5. *B. ranunculus*, sp. n.

Type-specimen. British Museum, D. 28838; *mucronatus*-zone; Rügen, Germany.

6. *B. aurita*, sp. n.

Type-specimen. In the collection of M. Canu (a photograph of type-specimen in British Museum); Maastrichtian; Royan, France.

7. *B. coaxans*, sp. n.

Type-specimen. British Museum, D. 14209; *mucronatus*-zone; Rügen, Germany.

8. *B.* [*Repteschariporа*] *convexa* (d'Orbigny), Pal. Franç. 1852, pl. 720. figs. 1–3, 1853, p. 492; Senonian [Campanian]; Meudon, France.

9. *B. hyla*, sp. n.

Type-specimen. British Museum, D. 11852; Maastrichtian; Maastricht.

10. *B.* [*Cellepora*] *ornata* (Goldfuss), 1826, Petr. Germ. vol. i. p. 26, pl. ix. fig. 1; Maastrichtian; Maastricht.

VII. PACHYDERA, Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 100.

Genotype. *P. grandis.*

Tabular Diagnoses of the Species.

A. Secondary aperture, though well formed, hardly tubular; costæ 8–10, with about 3 lateral fusions	1. *P. grandis.*
B. Secondary aperture distinctly tubular; costæ 6, with 1 or 2 lateral fusions	2. *P. densa.*

1. *P. grandis*, Marsson, 1887, Pal. Abh. vol. iv. Heft 1, p. 100, pl. x. fig. 14; *mucronatus*-zone; Rügen, Germany.

2. *P. densa*, sp. n.

Type-specimen. British Museum, D. 28210; Danian; Faxe, Denmark.

[To be continued.]

XIII.—*Description of a new Genus of the Family* Lacertidæ *from Central Africa.* By G. A. BOULENGER, F.R.S.

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BEDRIAGAIA.

Head-shields normal. Nostril pierced between the nasal, a postnasal, and the first upper labial. Lower eyelid scaly. Collar well marked. Dorsal scales large, rhombic, imbricate, and keeled; ventral plates obtusely pointed, imbricate, and keeled. Digits compressed, with smooth scales inferiorly. Femoral pores. Tail long, cylindrical.